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FORMALDEHYDE SEED TREATMENT *for* OAT SMUTS



A.—Loose smut of oats. B.—Healthy oat panicle
C.—Covered smut of oats

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FORMALDEHYDE SEED TREATMENT FOR OAT SMUTS

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Smut in oats causes a large annual loss that can be almost wholly prevented by treating the seed. There are two kinds of smut of oats—loose smut and covered smut. They differ somewhat in appearance, as shown in the illustration on the front page. Both are controlled by treating the seed with formaldehyde. The treatment is cheap, easy to apply, and very effective. Its use, therefore, is advised whenever it is known or suspected that the seed came from a smutty crop or from a crop grown near fields of smutted oats.

The formaldehyde treatment may be applied as a spray, a sprinkle, or a dip. Directions for each of these methods are given below. It will be noted that in all of the methods 1 pint of formaldehyde is used to treat 50 bushels of oats. The methods differ only in the quantity of water used and in the manner of applying the solution.

The seed should be thoroughly cleaned and graded before it is treated.

THE SPRAY METHOD

(Also called the "Haskell," "dry," or "mist" method)

Dump the seed on a clean barn floor or canvas, or in a tight wagon box.

Mix 1 pint of formaldehyde (37 per cent by weight) with 1 pint of water and pour into a quart sprayer. This quart of solution will treat 50 bushels. If fewer bushels are to be treated, use a correspondingly smaller quantity of the solution.

Shovel the oats from one pile to another, spraying each shovelful. One stroke of the piston produces about the right amount of mist for a dirt-shovelful of seed. A scoop-shovelful requires about four strokes.

After the oats are sprayed, shovel them into a pile and cover with blankets, canvas, or sacks that have been thoroughly sprayed with the solution to kill smut spores on them.

CAUTION

Formaldehyde vapor irritates the eyes, nose, and throat. These effects may be reduced (1) by holding the sprayer close to the oats; (2) by working from the windward side of the treated pile, and (3) by treating the seed in a well-ventilated place.

The pile should be covered at least five hours and may be left covered overnight. The oats may then be bagged and drilled. If sowing is delayed, or if it is planned to store the oats after treatment, the pile should be spread out and aired for a day. Treatment may be given at any time previous to sowing.

MODIFIED SPRAY METHOD

A modification of the spray method is used in some States with good results. This consists in mixing 1 pint of formaldehyde with 10 pints of water (instead of 1 pint of water as above). This quantity of solution is sufficient for 50 bushels. The treatment is carried out in the same manner as that described above, except that a heavier mist is applied to the seed, i. e., about 1 pint of solution to each 5 bushels.

THE SPRINKLE METHOD

Dump the seed on a clean barn floor or canvas, or in a tight wagon box.

Add 1 pint of formaldehyde (37 per cent by weight) to 40 gallons of water. This quantity of solution is sufficient for 50 bushels. If fewer bushels are to be treated, use a correspondingly smaller quantity of the solution. Apply the solution with a sprinkling can while the oats are being shoveled from one pile to another, or spread the oats in a thin layer, sprinkle, and shovel over until each seed is thoroughly wet. One gallon of solution should be used to each $1\frac{1}{4}$ bushels of seed.

Shovel the oats into a pile and cover with canvas, blankets, or sacks that have been thoroughly wetted with the solution to kill smut spores on them. The pile should be covered at least two hours and may be left covered overnight.

On removing the cover, sow immediately. Make allowance for the swollen condition of the seed by setting the drill to sow more heavily (about one-fourth more per acre). If sowing is delayed, the treated seed should be spread out and thoroughly dried.

MODIFIED SPRINKLE METHOD

In some of the States a modification of the sprinkle method described above is used with good results. The pint of formaldehyde is added to only 5 or 10 gallons of water (instead of 40 gallons of water as above). This quantity of solution is sufficient for 50 bushels. The solution is sprinkled on the oats, and the treatment is carried out in the same manner as that described above.

THE DIP METHOD

Put the seed into loosely woven burlap or gunny sacks (seamless, heavy cloth sacks are too tight). The sacks should be only half filled and tied at the top.

Mix 1 pint of formaldehyde with 40 gallons of water in a barrel or tank.

Dip the sacks of grain in this solution two or three times, or until the seed is thoroughly wet, draining after each dipping.

Remove the sacks from the solution and let them drain and dry at least two hours or overnight. Then either sow immediately or spread out the seed to dry. If the seed is sown immediately after treatment make allowance for its swollen condition by setting the drill to sow more heavily (about one-fourth more per acre). If sowing is delayed, the treated seed should be spread out and thoroughly dried.

The dip method is essentially the same as the sprinkle method described above, except that the seed is dipped in the solution instead of being sprinkled with it. The use of one method or the other is a matter of preference.

CAUTION

After using the sprinkle and dip methods, care should be taken to avoid freezing or heating of wet seed. In all methods, avoid contaminating the treated seed. If the bags and sacks have been used for oats before, they should be soaked in the formaldehyde solution or sprayed with it before treated seed is placed in them. Contaminated drills also should be disinfected.

Care should be taken to keep formaldehyde solution out of the eyes.

REMARKS

Surplus seed treated with formaldehyde may be fed to livestock without injury, provided the grain has been spread out first and thoroughly aired for several days.

Formaldehyde is now readily obtainable in pint cans at almost any drug store. No other measurement of the formaldehyde is necessary.

Oat smut produces smut only in oats. Smut in wheat, barley, corn, and other crops will not produce smut in oats.

In the last few years some organic mercury compounds and other chemical dusts have shown promising results in controlling oat smut.



